

CLAIMS

1. A method for concentrating a macromolecule from an aqueous starting solution having solution components, the solution components comprising the macromolecule and an organic polymer, the method comprising: (1) subjecting the aqueous starting solution to ultrafiltration to concentrate the macromolecule such that a first retentate solution is produced, (2) adjusting the conductivity of the first retentate solution such that precipitation of the solution components induced by the organic polymer is substantially prevented or substantially reversed to produce a second retentate solution, and (3) subjecting the second retentate solution to ultrafiltration to further concentrate the macromolecule such that a concentrated solution is produced.
2. The method of claim 1 wherein the conductivity is adjusted by diafiltration against water, suitable diluent or buffer.
3. The method of claim 1 wherein the conductivity of the first retentate solution is adjusted to below about 6 mS/cm as measured at 22°C.
4. The method of claim 3 wherein the conductivity of the first retentate solution is adjusted to between about 0.5 to 5 mS/cm as measured at 22°C.
5. The method of claim 1 wherein the conductivity of the first retentate solution is adjusted to between about 1.0 and 1.5 mS/cm as measured at 22°C.
6. The method of claim 1 wherein the organic polymer is a nonionic block copolymer.
7. The method of claim 1 wherein the organic polymer is Pluronic® F-68 polyoxyethylene-polyoxypropylene block copolymer.
8. The method of claim 1 wherein the macromolecule is a protein.
9. The method of claim 1 wherein the starting solution comprises mammalian or insect cell culture supernatant.
10. The method of claim 1 wherein the concentrated solution has at least a 50 fold higher concentration of the macromolecule than the starting solution.
11. The method of claim 1 wherein the concentrated solution has at least a 100 fold higher concentration of the macromolecule than the starting solution.